

CLAIMS

1. An antenna device for a portable radio communication device operable in at least a first and a second frequency band, the antenna device comprising:

- a first electrically conductive radiating element (10; 110; 210; 310) having a feeding portion (12; 312) connectable to a feed device (RF) of the radio communication device and a grounding portion connectable to a ground device (14, 314);
- a second electrically conductive radiating element (20'; 120; 220; 320);
- a controllable switch (30; 130; 230; 330) arranged between the first and second radiating elements for selectively interconnecting and disconnecting the radiating elements, the state of the switch being controlled by means of a control voltage input (V_{switch});

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- a filter (340) comprising a pure resistance arranged between the second radiating element (20'; 320) and the control voltage input (V_{switch}), wherein the filter is arranged to block radio frequency signals.

2. The antenna device according to claim 1, wherein the switch (30; 130; 230; 330) comprises a PIN diode.

3. The antenna device according to claim 1 or 2, wherein the filter (340) is a low pass filter blocking

signals at frequencies equal to and higher than the lower frequency band of said at least a first and a second frequency bands.

4. The antenna device according to claim 1 or 2, wherein the filter (340) is a band stop filter blocking signals in both a lower and a higher frequency band of said at least a first and a second frequency bands.

5. The antenna device according to any of claims 1-4, wherein the first radiating element (310) has a configuration that provides for more than one resonance frequency.

6. The antenna device according to any of claims 1-5, wherein at least one of the first and second radiating elements (110, 120) comprises a protruding portion (110a, 110b, 120a, 120b), and wherein the switch (130; 230) is connected to the protruding portion.

7. The antenna device according to any of claims 1-6, comprising a generally planar printed circuit board (70), wherein the first and second radiating elements (10, 20') and the switch (30) are arranged generally parallel to and spaced apart from the printed circuit board.

8. The antenna device according to any of claims 1-7, wherein the antenna device has a volume less than 3 cm^3 and preferably less than 2 cm^3 .

9. The antenna device according to any of claims 1-8, wherein the filter (340) is provided integrated with the second radiating element (20').

10. A portable radio communication device, comprising a generally planar printed circuit board and an antenna device connected to a feed device (RF) with electronic circuits provided for transmitting and/or receiving RF signals, and a ground device, wherein the antenna device comprises:

- a first electrically conductive radiating element (10; 110; 210; 310) having a feeding portion (12; 312) connected to the feed device (RF) of the radio communication device and a grounding portion connected to the ground device;
- a second electrically conductive radiating element (20'; 120; 220; 320);
- a controllable switch (30; 130; 230; 330) arranged between the first and second radiating elements for selectively interconnecting and disconnecting the radiating elements, the state of the switch being controlled by means of a control voltage input (V_{switch});

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a filter (40; 340) comprising a pure resistance arranged between the second radiating element (20'; 340) and the control voltage input (V_{switch}), wherein the filter is arranged to block radio frequency signals.